

## LECTURERS

### Ira Cotton

National Bureau of Standards

### Edward DeLand

R&D Associates and  
UCLA Department of Surgery

### Robert M. Dunn

R&D Technical Support Activities  
U.S. Army Electronics Command  
Fort Monmouth, N.J.

### Samuel J. Dwyer, III

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University of Missouri — Columbia

### Robert Ellis

Computer Systems Laboratory  
Washington University (St. Louis)

### James D. Foley

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University of North Carolina

### Robert Heilman

Dept. of Computer Science  
University of Oregon

### Jon Meads

Teletronix Corporation

### Carol Newton

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University of California at Los Angeles

### William Pratt

Dept. of Electrical Engineering  
University of Southern California

### William Raub

Biotechnology Resources Branch  
National Institute of Health

### Karl Ryden

Health Sciences Computing Facility  
University of California at Los Angeles

### Harold Shipton

Bioengineering Resource Facility  
University of Iowa

## WORKSHOP OUTLINE

### Sunday

- 9:00 1 Introduction to the Computer  
1:30 2A Basic Computer Graphics Pertinent Biomedical Background  
3:10 3A Computer Graphic Surveys  
3B Survey of Graphics Applications in Biology and Medicine  
8:00 5 NIH's Interest in Computer Graphics

### Monday

- 8:30 6A Graphics Languages  
6B Hardware and System Evaluation  
6C Biomedical Applications  
6D The Human Interface  
12:15 7 No Host Luncheon  
1:30 8A Data Structures  
8B System Comparison — How Reliable?  
8C Advanced Techniques in Picture Processing  
8D Biomedical Image-Processing Applications  
3:10 9A Image Processing Technology  
9B Using the Data Tablet  
9C Guidelines to Graphics in Biomedical Applications  
9D Computer Graphics and Standards  
5:15 10 Final Plenary Session  
8:00 11 Informal Manufacturers Session

## REGISTRATION

The fee schedule is planned to allow participants to select either one or both days of the workshop depending on interest and experience. A \$5 discount is available to those registering before 24 November 1972. Make checks payable to ACM Computer Graphics Workshop and return with this form to Dr. Edward DeLand, RDA, P.O. Box 3580, Santa Monica, California 90406.

	1st Day	2nd Day	Both Days
SIGGRAPH and ACM member or SIGBIO and ACM member	\$20	\$30	\$35
SIGGRAPH or SIGBIO or ACM members	25	35	40
Non-members	30	40	45

Name

ACM Number

Organization

Address



**ACM Graphics Workshop**  
P.O. Box 3580  
Santa Monica, Calif. 90403

00 73-01 GRAPH  
THEODOR H NELSON  
BOX 3  
SCHODLEYS MT N J 07870

FIRST CLASS MAIL



#### CONFERENCE CHAIRMEN

Carol M. Newton  
Jon A. Meads

FINANCE CHAIRMAN  
Karl Ryden

ARRANGEMENTS  
O. Dale Smith

PUBLICITY  
Dorothy Ringer

REGISTRATION  
Edward DeLand

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### Computer Graphics Workshop

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with emphasis on biomedical applications

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**December 3, 4, 1972**  
**Disneyland Hotel**  
**Anaheim, California**

immediately preceeding Fall Joint Computer  
Conference

Sponsored jointly by  
SIGBIO and SIGGRAPH  
Association for Computing Machinery

Technological advances and price reduction promise to move computer graphics more effectively into a number of application areas. The potential of graphics in biology and medicine has been recognized for some time by the National Institutes of Health, which has supported a number of developmental efforts in basic and applied graphics.

This professional development seminar offers participants a selection of timely advanced sessions in graphics technology and biomedical applications preceded by tutorial preparation directed to people of diverse backgrounds.

This seminar has been organized and priced to benefit a number of different people:

**PHYSICIANS AND BIOLOGISTS** are offered an economical one-day tutorial that begins with an introduction to computer concepts, develops an understanding of graphics technology, and concludes with a survey and commentary on computer graphics applications in clinical practice and biological research.

**COMPUTER GRAPHICS PROFESSIONALS** might wish to concentrate on the advanced technological sessions offered the second day.

**MOST PARTICIPANTS** will find technological and biomedical preparation provided the first day to be helpful for advanced sessions offered the second day.

**ALL PARTICIPANTS** are invited to hear Dr. Raub's presentation Sunday evening.



SUNDAY

<u>Time</u>	<u>Session</u>	<u>Topic</u>
9:00 - 1:00	1	<u>Introduction to the Computer</u> Basic tutorial for biomedical scientists.
1:30 - 3:00	2A	<u>Basic Computer Graphics</u> Introductory tutorial on Computer Graphics.
	2B	<u>Pertinent Biomedical Background</u> A tutorial pertinent to topics discussed in later sessions.
3:10 - 5:30	3A	<u>Computer Graphic Surveys</u> Tutorial on low-cost graphics, graphic system, graphic peripherals, etc., for the basic and intermediate graphics user and the biomedical attendees who expect to continue with Monday sessions.
	3B	<u>Survey of Graphics Applications in Biology and Medicine</u> Mostly for biomedical professionals who plan to attend only one day. Also for graphics people who would like to learn more about biomedical applications but plan to attend only sessions on graphics technology Monday.
6:00 - 7:30	4	No Host Cocktail Party and Dinner
8:00 - 9:30	5	<u>NIH's Interest in Computer Graphics</u> The National Institutes of Health's support for R & D in graphics technology and biomedical applications is discussed by Chief, Biotechnology Branch, Division of Research Resources.

MONDAY

8:30 - 12:00	6A	<u>Graphics Languages</u> Workshop. Programming languages and systems for Computer Graphics. What is available and what is needed.
	6B	<u>Hardware and System Evaluation</u> Workshop. Specification and evaluation of Computer Graphics Systems for various applications.

Computer Graphics Workshop

6C

with emphasis on biomedical applications

12:15 - 1:15	7	No Host Luncheon
1:30 - 3:00	8A	<u>Data Structures</u> Tutorial workshop on data structures for the beginner and intermediate graphics programmer.
	8B	<u>System Comparison - How Reliable?</u> Investigation on the reliability of system comparison using systems for radiation treatment planning as a vehicle for discussion.
	8C	<u>Advanced Techniques in Picture Processing</u> Tutorial workshop on hidden surface removal and half-tone shading techniques.
	8D	<u>Biomedical Image-Processing Applications</u>
3:10 - 5:00	9A	<u>Image Processing Technology</u> Tutorial workshop on image processing-- why, what, and how.
	9B	<u>Using the Data Tablet</u> Tutorial/discussion workshop on the potential of the data tablet and how to use it.
	9C	<u>Guidelines to Graphics in Biomedical Applications</u> Discussions on reliability, backup, costs, human interface, etc.
	9D	<u>Computer Graphics and Standards</u> Discussion on possible hardware and software standards. What is useful and how standardized.
5:15 - 6:30	10	<u>Final Plenary Session</u> A wrapup session for the hardy few who can still hang on. Also, a chance to get a synopsis of those sessions you wanted to attend but could not.
8:00 - 9:30	11	<u>Informal Manufacturers-Users Session</u> For those who still want more, we hope to provide you a chance to speak to the makers of those confounded machines and maybe a demonstration or two.

Biomedical Applications

In-depth discussion of three application areas: modeling systems, manipulation of 3-D structures (molecules, reconstructed organisms), clinical applications (radiation treatment planning).

The Human Interface

Discussion workshop. Effective utilization of Computer Graphics for man-machine communication.